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CURRENT POSITION

- Medical Staff of Allergy – Clinical Immunology Division, Internal Medicine Department , Faculty of Medicine Universitas Indonesia / Dr. Cipto Mangunkusumo National Hospital

ORGANIZATIONS

- Secretary of the Indonesian Association of Physicians in AIDS Care
- Vice Secretary General of Indonesian Society of Allergy and Immunology
- Second Secretary of the Indonesian Society of Allergy and Immunology – Jakarta Chapter
- Member of Indonesia Influenza Foundation
- Member of APACI

EDUCATION

- 2015 Internal Medicine Department, Faculty of Medicine of Universitas Indonesia
- 2009 Faculty of Medicine of Universitas Indonesia



INFLUENZA VACCINATION AMONGST HEALTHCARE WORKERS



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INTRODUCTION



- Influenza poses significant risks to healthcare institutions.
- influenza virus is spread easily through coughing or sneezing (droplets), fomites or contaminated hands
- Both patients and healthcare workers (HCW) with influenza at risk of nosocomial transmission of disease
- Infected staff may transmit the virus to patients, other staffs, their family, and patients' family/visitors

INTRODUCTION

- Among vaccine preventable diseases, influenza is a common cause of sick leave at work
 - Flu is responsible for 10-12% of all absenteeism worldwide¹
- A sick HCW often force him/herself to come to work²
- Risk of nosocomial transmission to patients, especially highly vulnerable patients, thus potentially causing an influenza outbreak.

1. Leighton L et al. Occup Med 1996;46(2):146-50

2. Szymczak JE, et al. JAMA Pediatr 2015;169:815-21.



NOSOCOMIAL INFLUENZA

Nosocomial influenza A (H1N1) infection

- The first report on nosocomial case of influenza A/Brazil/78
- A 25-year-old female developed nosocomial influenza 21 days after admission to the hospital for a diagnostic evaluation of weight loss and abdominal pain
- There was an influenza outbreak in nursing students at the same hospital
- Viral cultures obtained from the patient and two of the nursing students yielded influenza A/Brazil/11/78 (H1N)-like viruses.

Nosocomial influenza B virus infection in the elderly.

- A hospital-acquired outbreak of ILI in 29 patients
- Eighteen of the 29 patients had influenza B virus infection
- Absenteeism of the hospital staff because of ILI preceded the outbreak by several weeks

Influenza Outbreaks in Healthcare Facilities are Common and Probably Underreported

Morbidity and Mortality Associated With Nosocomial Transmission of Oseltamivir-Resistant Influenza A(H1N1) Virus

Clinical Impact of A/H1/N1/09 Influenza in Patients With Cirrhosis: Experience From a Nosocomial Cluster of Infection

A nosocomial outbreak of influenza during a period without influenza epidemic activity

Pandemic A/H1N1/2009 influenza in a paediatric haematology and oncology unit: successful management of a sudden outbreak

RAPID COMMUNICATIONS

A nosocomial outbreak of 2009 pandemic influenza A (H1N1) in a paediatric oncology ward in Italy, October – November 2009

The Consequences of Healthcare-associated Influenza

- **Nosocomial outbreaks** with illness and deaths in vulnerable patients
- **Extended hospital stays** and increased costs
- Sick and exposed hospital staff furloughed from work, creating **staff shortages**
- **Damage to the reputation** of the healthcare facility

Healthcare Workers Face a Higher Risk of Influenza Infection than other Adults

- Rate of influenza infection in Healthcare workers (HCW) during mild season is around 23%¹
 - 28–59% is subclinical yet potentially transmissible²
- HCW are at significantly higher risk of influenza infection³
 - Unvaccinated HCW **3.4 times as likely** to experience an influenza infection as unvaccinated healthy adults
 - Incidence rate **among HCWs: Vaccinated 6.49, Unvaccinated 18.69**
- HCW are exposed to influenza virus aerosols during routine patient care⁴

1) Elder et al. BMJ 1996;313:1241– 2.

2) Nair et al. BMJ 2012;344:e2217.

3) Kuster et al. PloS One 2011;6:e26239.

4) Bischoff et al. J Infect Dis 2013;207:1037-46.

Unvaccinated HCWs Transmit Influenza to Vulnerable Patients

- ▶ In neonatal intensive care units^{1,2,3}
- ▶ In organ transplant units⁴

1. Cunney RJ, et al. *Infect Control Hosp Epidemiol*. 2000;21:449–51.

2. Hall, C. *Pediatrics*. 1975.Vol 55(5), 673-77.

3. Tsagris V, et al. *J Hosp Infect* 2012;81(1): 36-40.

4. Malavaud S, et al. *Transplantation*. 2001;72:535–7.



ANNUAL INFLUENZA VACCINE FOR HEALTHCARE WORKERS

HCW influenza vaccine rates

- USA 2012 – 2013 : 61.5 – 72%
- Canada 2012 – 2013 : 74%
- European Union : 6 – 54%
- Qatar 2015 : 77%
- Saudi Arabia 2015 : 20.7%

1)Black et al. Morb Mortal Wkly Rep 2014

2)Kassianos. Drugs Context 2015;4:212268

3)Public Health Ontario. Ontario Respir Virus Bull 2014.

4)Elawad et al. Vaccines (Basel) 2017;5:36.

5)Abalkhail et al. J Infect Public Health 2017;10:644-8.

Influenza vaccination in HCW decreases all-cause mortality among elderly people in long-term care

Carman et al. (2000)

- Patients mortality rate was 13.6% in vaccine hospitals vs. 22.4% in no-vaccine hospitals
- Vaccination of health-care workers almost halved the risk of mortality among patients (OR 0.58 [95% CI 0.40-0.84], $p=0.014$)

Potter et al. (1997)

- Reductions in total patient mortality from 17% to 10% (OR 0.56; 95% CI 0.40-0.80) and in influenza-like illness (OR, 0.57; 95% CI, 0.34-0.94).

Influenza vaccination in HCW decreases all-cause mortality among Elderly in Nursing Home

Lemaitre et al (2009)

- 20% lower mortality on vaccination arm (OR 0.80, 95% CI 0.66–0.96, p 0.02).
- A strong correlation between staff vaccination coverage and all-cause mortality in residents
- In the vaccination arm, ILI in residents was 31% lower

Hayward et al (2006)

- Decrease of mortality (rate difference – 5.0 per 100 residents, 95% CI – 7.0 to – 2.0)
- Decrease of ILI, consultations with general practitioners for ILI and admissions to hospital with ILI

Lemaitre et al. J Am Geriatr Soc 2009;57:1580–6.

Hayward et al. BMJ 2006;333:1241 .

Influenza vaccine in HCW will reduce absenteeism

Saxen et al. (1999) in Pediatric Hospitals

- Decrease of days of work lost because of respiratory infections (1.0 days vs. 1.4 days)
- Decrease of days the study persons felt themselves unable to work when either on or off duty (2.5 days vs. 3.5 days).

Wilde et al (1999) in teaching hospitals

- Decrease of days of absence 9.9 per 100 subjects vs 21.1 per 100 subjects

Bridges et al.(2000)

- Vaccination reduced ILI, physician visits, and lost workdays by 34%, 42%, and 32%, respectively.

Saxen et al. *Pediatr Infect Dis J* 1999;18:779-83.

James et al. *JAMA* 1999;281:908-13

Bridges et al. *JAMA* 2000;284:1655-63.

RECOMMENDATION OF INFLUENZA VACCINATION FOR HEALTH CARE WORKERS

- The Advisory Committee on Immunization Practices in 1984
- The Society for Healthcare Epidemiology in 2005
- The Association for Professionals in Infection Control 2004
- The Infectious Disease Society of America in 2009

How to improve vaccination rates

- vaccine free of charge
- multiple convenient sites and times
- incentives and rewards
- leadership support
- extensive publicity and educational programs
- declination statements
- mandatory vaccination program

Mandatory influenza vaccination program

- Virginia Mason Hospital (Seattle, WA) in 2004, vaccination rates of >98%
- BJC HealthCare in 2008, vaccination rates of 98.4%¹
- **The Hospital Corporation of America** in 2009, vaccination rate of 96.4%²
- In a US CDC survey, vaccination coverage was 98.1% among HCWs in employer mandated facilities³

1. Babcock et al. Clin Infect Dis 2010;50:459-64.
2. Kidd, F. et al. Am j of Infect Control. 2012;40:188-90.
3. MMWR 2011;60:1073-7.

Influenza Vaccination is an Ethical Responsibility and Patient Safety Issue

- ▶ Influenza vaccination of healthcare workers is a personal issue, a professional issue and an institutional concern
- ▶ HCW vaccination builds public trust and credibility in the healthcare facility by putting patient safety first
- ▶ Vaccination is consistent with the ethical imperative to “do no harm” by taking reasonable action to prevent disease transmission in healthcare settings
- ▶ *“the welfare of patients is best served by very high rates of staff immunity that can only be achieved through mandatory vaccination...under voluntary standards, institutional outbreaks occur”* AM Stewart. N Engl J Med 2009; 361:2015-7.

CONCLUSIONS

- Influenza is easily transmitted between healthcare workers and patients
- Influenza infection represents a clear threat to patient health and safety
- The consequences of healthcare facility infections are significant
- Influenza vaccination is safe and effective
- HCW influenza vaccination is a key component of an effective healthcare facility infection control program

THANK YOU

